

Also taken, three species of Grebe:— Red-necked or Holboell's Grebe, *Colymbus grisegena holbollii* (Reinh.), Horned Grebe, *Colymbus auritus* L., Pied-billed Grebe, Dabchick or Hell Diver, *Podilymbus podiceps podiceps* (L.) and American Coot or Mud-Hen, *Fulica americana americana* Gmel.

According to information received *in litt.* some 20 species of dabbling and diving ducks commonly nest in Alberta and the Northern Pike, *Esox lucius* and Arctic Char, *Salvelinus alpinus malma* (Walbaum) prey occasionally on ducklings. Pike occur sporadically in the warmer waters of the prairies and parklands where most of these ducks nest. The Goldeneyes, *Bucephala* spp., the Mergansers, *Mergus* spp. and the Harlequin Duck, *Histrionicus histrionicus* (L.) breed in the range of the Arctic Char, i.e., the cooler waters of the foot-hills, mountains and north.

The latest information received from Ducks Unlimited (Canada) indicates that "little research work has been done on pike predation on waterfowl in recent years", and though this wastage continues "the overall losses are small in comparison to losses suffered from raccoon and skunks".

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References:

- ¹ 1940 Bajkov, A. D. and Shortt, A. M. Northern Pike as Predator on Waterfowl and Muskrat. Pub. by Ducks Unlimited (Canada).
- 1940 Ross, D. A. Jackfish Investigation, 1940. Athabaska Delta, Alberta. Pub. by Ducks Unlimited (Canada).
- 1940 Solman, V. E. F. Jackfish Report, 1940. Pike Study, 1940. Lower Saskatchewan Delta, Manitoba. Pub. by Ducks Unlimited (Canada).
- 1945 Solman, Victor E. F. "The Ecological Relations of Pike, *Esox lucius* L. and Waterfowl". Ecology, Vol. 26, No. 2, pp. 157-170, April, 1945.
- 1954 Wright, Bruce S. High Tide and East Wind, pp. 51-53.

Notes on the African Lily-trotter *Actophilornis africanus* (Gmelin)

by G. R. CUNNINGHAM-VAN SOMEREN AND C. ROBINSON

For several years African Lily-trotters, *Actophilornis africanus* (Gmelin) have frequented an eight-acre dam at Karen, near Nairobi, Kenya, at an altitude of 6,000 ft. The birds were first recorded when blue water-lily (*Nymphaea capensis*) invaded the dam and provided a suitable habitat. Later, when a planted bed of an exotic water-lily spread, this formed the breeding focus for the birds as the pads were generally denser and formed a more secure base for the flimsy nests. Incidentally, the leaves of the yellow lily have a purple-brown under-surface and these with the yellow flowers form a striking similarity of colour to the plumage of the Lily-trotter. Certainly cryptic, and the sitting bird was extremely difficult to spot even with the aid of field glasses.

Several pairs of Lily-trotters have nested during the last few years, but previously we failed to see chicks. This season, June/July, 1961, a pair nested among the yellow lilies and from a permanent floating "hide" many hours of observations were made and the hatching of an egg and the

brooding of chicks was witnessed with, finally, the chick-carrying by the parent birds. Many photographs, ciné and still, in both black-and-white and colour, were secured by us.

The notes confirm, to some extent, and add to those of Pitman (*Bull. Brit. Orn. Cl.* 80 (6), 1960: 103–105 and Simpson (op. cit. 81 (5): 82–85).

The area of lily-pads at Karen has supported one pair (and on occasions two pairs) of Lily-trotters over the last five years, but this year, 1961, only one pair has been in residence and this may have been due to the presence of a sub-adult believed to be the 1960 offspring of the pair under observation in 1961. When two pairs are in residence there is some evidence of territory sharing, both pairs using the whole area, but when breeding commences there is a marked change in the disposition of the birds. The breeding pairs showed antagonism to any intruder into the nest area, either of its own kind or another species. This reaction was more pronounced in the female, which will even leave its nest to drive off an intruder. Observations over several years suggest that the male normally fed somewhere close to the sitting female, but in 1961 the male seldom visited the nest area nor took part in attacks on intruders. Other males have been known to assist the female in repulsing intruders. Attacks are usually vicious and sustained, particularly if the intruder resists attack. This was particularly the case when the female, in 1961, drove off Coot (*Fulica cristata* Gmelin), Moorhen (*Gallinula chloropus meridionalis* Brehm), Black Crake (*Limnecorax flavirostris* Swainson) and the White-rump Diving Duck (*Thalassornis leuconotus* Eyton). All these species were breeding in a clump of papyrus within fifty yards of the Lily-trotter, which took particular exception to Moorhen coming into the yellow water-lily area, and the bird was seen to plunge into long grass in pursuit. Recently an attack on a Squacco Heron (*Ardeola ralloides* Scopoli) lasted a full ten minutes. The birds struck at each other repeatedly; the Lily-trotter with feet and bill and with wings raised, while the Squacco stood slightly crouched forward, crest and hackles raised with wings slightly fanned while making sudden stabs with its bill. When the Squacco broke off the engagement and flew to other patches of lilies the Lily-trotter followed striking at the back of the bird in flight and would then settle down beside it, walking round and round while making quick sorties. During these attacks the Lily-trotter uttered repeatedly a loud, rather raucous "churring" call.

At Karen nests have been found in the months of December, January, February (the hot dry season) and May, June, and July (the end of the rains in July is usually cold).

The incubation period at the Karen 1961 nest appeared to be 26 days approximately. The bird was observed building the platform on 4th June in the late afternoon and on examination it appeared substantial and complete. On the 8th June it was found to contain four eggs. Two chicks were observed on the 3rd July at midday, already dry, but not very active, while a third chick was struggling between two halves of an egg-shell (one egg remained, later proved to be infertile).

All nests examined at Karen consisted of small quantities of water-lily leaf and debris with bits of other vegetation, Potamogeton, etc., which formed a slightly raised platform usually built on the top of a living

water-lily leaf or several leaves. The raised area is about nine to twelve inches in diameter, one or two inches above water level. The vegetation rapidly disintegrates and the bird constantly adds new material obtained in the vicinity of the nest or gathered and brought in her bill a distance away. After two weeks of incubation the nest becomes waterlogged as the surrounding water-lily leaves have been pressed down by the comings and goings of the bird.

At Karen the clutch has been invariably four eggs. In one clutch there were two eggs with abnormal markings. One had pale buff-sandy background with a few black-brown blotches and the second egg was of similar ground colour but almost immaculate; while the remaining two eggs were the usual dark khaki colour heavily marked with fine interwoven black scrolls.

During incubation the hen sits rather hunched up with the wings lowered and held close to her sides, the legs and feet spread well out on either side. The eggs are held against the bird's side by the wings, which appear to "scoop" them up as she sits down. The eggs are not in contact with the nest during incubation. She may sleep for short intervals or peck at odd objects around her, such as bits of vegetation which may be added to her nest; small creatures in the water or on a leaf nearby are sometimes consumed. Flies worried the bird at one nest, and she was an adept at catching them. At one nest a head of papyrus (*Cyperus*), used to camouflage the hide, was "stolen" and partly incorporated into the nest in such a manner that the sitting bird was hidden when viewed from the "peep-holes" in the hide. At other nests the birds have used lily leaves to screen themselves from observation.

Periodically sitting birds would, suddenly and for no apparent reason, leave the nest protesting loudly, running a few yards to tug at water-lily leaves. At other times they would move off the nest only a foot or two to peck at leaf debris which would be flicked back towards the nest. Whether this was a form of displacement reaction or not is uncertain, but it occurred at all nests we have observed. Another reaction on leaving the nest and having run a few feet away across the pads, the bird would suddenly raise her wings "butterfly fashion" perpendicularly above her back, at the same time calling loudly as if in protest. This reaction has been described by Pitman (op. cit.) and has also been observed in the non-breeding season. The male bird indulged in this action on the only occasion it was seen to approach the female on the 1961 nest. The female would, at odd times, leave the nest to feed, which she might do up to a considerable distance away. Occasionally she would join the male. At most nests the male was a regular visitor to the nest vicinity and often enough would give the alarm call if some danger threatened such as the appearance of a raptorial over the dam.

At the 1961 nest the female, in the last week of incubation, would not readily leave even on the approach of the boat to the floating hide. If she did leave she returned as soon as the observer entered the hide. Once on the nest even considerable disturbance, such as waving hands outside and banging on the sides of the hide, would not make her get up or change her position.

The most extraordinary piece of *datum* recorded during the 1958 season concerned a nest containing four eggs one evening, and on the following morning was found empty. However, there were four eggs on a newly constructed nest some twelve to fifteen feet away. This bird had been visited regularly, and it made a new nest during the evening and the following early morning, transporting the eggs over to the new nest. The question that arises is how the eggs were carried—in the bill or under her wings? We have a record of another nest that was rebuilt when it was in danger of submerging. The new nest was within 12 to 18 inches of the original and the eggs could have been rolled from one to the other.

THE CHICKS. The chick, on hatching, appears naked and is a grey-black colour tinged with blue. The feet are *not* conspicuously large. The egg-tooth is quite pronounced and the eyes remain closed for several hours. The chick is extremely weak and only just able to wriggle about. The female picks up the chick in her bill and pushes it under her wings. Two chicks were cared for in this way, but the third chick received very little attention and lay struggling, out in the sun, or just in the water, within reach of the parent's bill. She appeared to take little notice of it, perhaps because she was brooding the two earlier hatched chicks which were dry, though not very strong, and could only just stand up. The plumage of the chicks was as described and illustrated by Benson in Pitman (opp. cit.) and for the first twenty-four hours at least the feet did not appear to be so exaggerated as those depicted by Benson.

On 3rd July when first disturbed this female ran off the nest which was found to contain two eggs, one of which was hatching. It was not for some minutes that two chicks were noted on a lily-pad below the standing parent. When the observer had settled down into the hide and all was quiet the female, all the while uttering a low rather plaintive "churring" call, gradually coaxed the two chicks to her breast and helped them, by pushing with her bill, into her sides holding them in position with her wings—one chick on each side. She then returned to the nest to incubate the egg and brood the third chick. It was only after some minutes that she allowed the two dry chicks to leave the security of her wings though the watcher could see the pale grey toes and legs below the primaries. The fourth egg proved to be infertile and was removed from the nest by the bird, being found some feet away. On one occasion Robinson disturbed the parent, which promptly left the nest with the chicks which she deposited on a lily leaf. After a time he watched her deliberately flatten out the rather wind ruffled leaves with her feet so as to make it easy for the chicks to cross to her side (all the time she called quietly to the chicks). Both chicks have been noted under one wing; usually they are carried one under each wing. When carrying the chicks our bird assumed a rather crouched lowered posture and repeatedly squatted on a pad for a few seconds before proceeding again. She pushed her bill under her wings from time to time as if to assure herself the chicks were in position or to adjust their, and possibly her own, comfort. At 24–36 hours old the two chicks were fairly agile and could stand upright while at 48 hours they could follow their parent, though somewhat haltingly. At three days old they could run quite swiftly over the pads. At ten days old they foraged for food well away from the

parent but would, on a call from her, either quickly return to her, or hide by squatting down low on the pads. Occasionally when disturbed the chicks would submerge almost completely in water and at 12 days old they were observed to swim readily, again almost completely submerged with only the head above water. The female parent at this stage would still carry the chicks, about with her when alarmed; the chicks' legs below her wings were very conspicuous (see Simpson, op. cit.). (We suggest his chicks were about ten days old. This is judged by the size of the chick in his photographs compared with our pictures taken when chicks were a few hours old to 21 days old.) At 16–20 days old the chicks' reaction was to run, and suddenly squat or hide if disturbed. The parent appeared to control reaction to some extent as she called repeatedly as soon as we approached, but once the boat was still the parent would either call to the chicks to run or would come over to them calling.

At the time of writing these notes, with the chicks away from the nest, the distraction behaviour so well described by Simpson had not been seen but the 1961 bird and others have often gone through the pattern of "wing fluttering", "broken wing" and "broken leg" actions supplemented with "crawling" along the pads to almost lying on the pads while pushing themselves along by their legs. These reactions have often been seen during the last week or so of incubation when the nest has been approached.

A December hatched sub-adult bird seen in March was able to swim very strongly indeed and, though chased in a boat, with the object of taking "close-up" photographs, defied all efforts as it would swim and hide readily under lily-pads and then suddenly disappear only to reappear some distance away. One swim followed was almost 100 yards in length, across the width of the dam over the very deep weed-free water. All that could be seen of the swimming bird was its neck and head with the two "knees" well up above water level paddling furiously.

FOOD AND FEEDING. While feeding, the birds are very active turning over lily leaves and other vegetation and poking here and there into the water to catch small creatures. At the nest the birds have been observed to catch flies and on several occasions I have seen them catch bees flying about in the water-lily flowers. In every instance the bee has been dipped into the water prior to being swallowed. From the hide, with binoculars, we have identified the following food: snails from off the lily-leaves (probably *Bulinus*, *Biomphalaria* and *Lymnaea* with which the dam abounds); gelatinous substance taken from the pads (probably snail egg masses); and larvae of Odonata; as well as smaller creatures which could not be identified.

CALLS. We have failed in attempts to record the various calls which we can only define as "churring" sounds.

SIZE AND SEX OF BIRDS. Mackworth-Praed and Grant (*Birds of Eastern and North-eastern Africa* 1, 1952) state: "Sexes alike but the male is smaller than the female", while Austin Roberts (McLachlan & Liver-

sedge) *Birds of South Africa* 19 states "Sexes alike, the female slightly larger but size variable". Cave and Macdonald, *Birds of the Sudan* 1955 do not comment on the size. It is our experience at all the nests at Karen that the female, the bird that incubates the eggs, is the smaller bird. A number of local observers have checked on this point in recent years at Karen and we are unanimous in our decision. The male is a larger bird, rather obviously so; also brighter in plumage with apparently a greater extent of yellow on throat.

A resident young bird now between six and seven months old, is conspicuously smaller than the breeding birds, while its plumage is rather a dull warm brown on the wings and back and not the rich rufous-chestnut of the mature birds. The whole plumage is generally duller and the yellow on the throat and blue on the culmen are lacking.

Pitman (op. cit.) raises the subject of the posture of the head and neck in flight and our observations tend to confirm that generally the head and neck are somewhat extended when in flight, but we have seen the bird with neck held back, head down, and drawn into the shoulders. This latter posture may be part of a display pattern and often enough we have seen the birds adopt this posture over the pads during part of what might be described as a mating display, when the wings are raised and the birds tend to jump up in short flights. On the other hand because the head and neck are somewhat extended in flight the reader must not compare the extent and formation as being similar to that of a stork; yet the head and neck are not drawn in and hunched after the manner of a heron.

Erythropygia quadrivirgata and allied species

by C. W. BENSON AND C. M. N. WHITE

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Clancey (1960) recognises *E. q. rovumae* and *E. q. wilsoni* as distinct from *E. q. quadrivirgata*. We have examined part of the material studied by Clancey, and a considerable body of further material, as listed below under measurements. Except for that of this species under (d) below, in which there is a tendency for the olive of the upperside to be slightly paler, but not sufficiently well differentiated to be worthy of subspecific recognition, we are unable to discern any colour-difference. That under (g) certainly shows a marked tendency to smallness, but we see no particular advantage in recognising *E. q. rovumae* as distinct from *E. q. quadrivirgata* on this basis alone, especially as we are unaware of any discontinuity in distribution.

Wing and tail-measurements in mm. of material examined by us are as follows:—

	<i>Wing</i>	<i>Tail</i>	$\frac{100 \times \text{tail}}{\text{wing}}$
			<i>E. signata tongensis</i>
	False and Kosi Bays, and north-east Sibayi, Zululand		
3♂	85, 85, 86	68, 72, 73	83.2